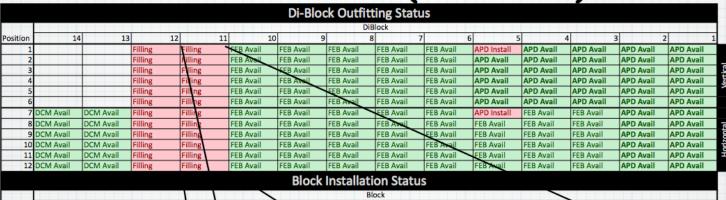
NOvA Experiment Status

Steve Magill Argonne National Laboratory
All Experimenter's Meeting, December 16, 2013

FarDet Outfitting Progress

Di-Block Status (12/16/13)



| Status | Set | Set | Set | Filling | Filling | Filled |

Today 12/16: Topping up block 21 (22nd block)horizontals. Install APDs on DCM-2-05-01

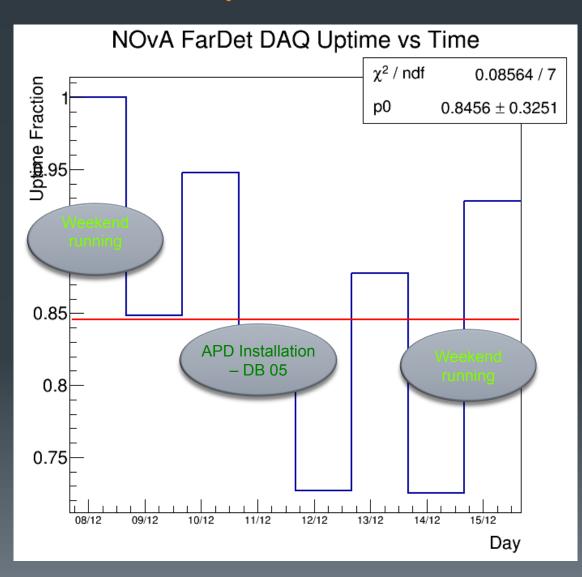
Tuesday 12/17: Begin filling block 22 (23rd block) horizontals Install APDs on DCM-2-05-07, 08 (DCM-2-03-07 pending APD availability). Install FEBs on block 21 (top first then side).

Wednesday 12/18: Begin cooling APDs on di-blocks 04,05 top.
Install APDs location pending type of parts available (prioriority di-block 03 side).

Filling

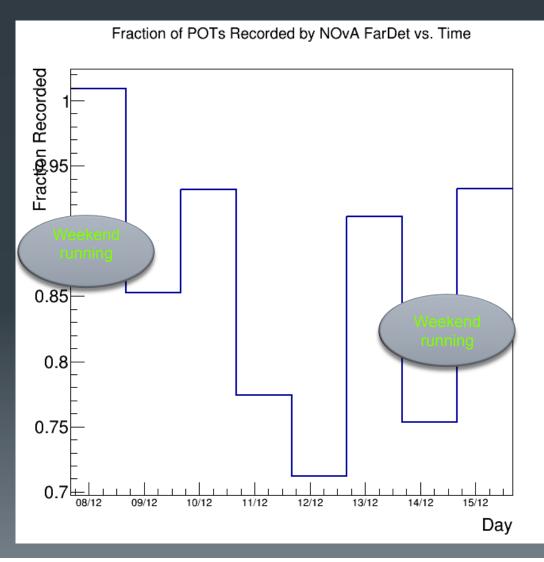
| | Vertical Modules | | | | | | | | | | | | | | Vertical Modules | | | | | | | | | | | | | | | | | | | |
|--|---|--|---|---|---|---|---|--|--|---|--|---|---|---|---|---|--------------------------------|--|--|---|---|---|---|---|--|--|---|---|---|--|--|---|---|--|
| osition | 31 | 29 | 27 | 25 | 23 | 21 | | | 15 | | | | | 5 | 3 | 1 | | Position | 31 | | 27 | 25 | 23 | 21 | 19 | 17 | 15 | 13 | _ | 9 | 7 | 5 | 3 | 1 |
| 0 | | | 251 | 250 | | 251 | | | 250 | | 249 | | | | | | | 0 | 253 | 251 | 238 | 251 | 253 | 252 | 251 | 251 | 251 | 250 | 249 | 249 | - | | 252 | |
| 1 | | 251 | | 251 | 250 | 250 | 250 | 250 | 250 | 247 | 253 | 247 | | | 249 | | | 1 | 250 | 253 | 251 | 251 | 251 | 252 | 254 | 252 | 249 | 252 | 251 | 250 | 250 | 251 | 251 | 251 |
| | | | 251 | 250 | 248 | 251 | 249 | 249 | 251 | 251 | 251 | 250 | 251 | 249 | | | | 2 | | 252 | 253 | 253 | 252 | 251 | 252 | 250 | 251 | 251 | 251 | | 250 | 251 | 251 | 252 |
| 3 | - | 249 | _ | 255 | 248 | 250 | 252 | 250 | 249 | 251 | 250 | 253 | 250 | 253 | - | _ | | 3 | - | 251 | 253 | 251 | 249 | 252 | 254 | 250 | 250 | 248 | 254 | 248 | 250 | 250 | - | 252 |
| 4 | 150 | 250 | | 250 | 249 | 252 | 248 | 250 | 249 | 251 | 248 | 249 | | 252 | | | | 4 | 253 | | 251 | 251 | 252 | 253 | 252 | 251 | 252 | 252 | 247 | 250 | 250 | 251 | | 252 |
| 5 | | 251 | 252 | 250 | 252 | 250 | 246 | 246 | 249 | 251 | 249 | 253 | 248 | 251 | 248 | 252 | | 5 | 252 | 250 | 250 | 250 | 251 | 251 | 250 | 250 | 251 | 252 | 252 | 252 | 250 | 249 | 251 | 252 |
| 6 | 251 | 251 | 253 | 251 | 252 | 250 | 233 | 249 | 249 | 249 | 250 | 252 | 251 | 249 | | 251 | | - 6 | | 248 | 254 | 252 | 251 | 252 | 250 | 251 | 250 | 249 | 253 | 249 | 250 | 251 | 250 | 251 |
| 7 | 145 | 105 | 254 | 252 | 250 | 251 | 252 | 251 | 248 | 248 | 252 | 249 | 252 | 249 | 249 | 249 | | 7 | 247 | 250 | 252 | 254 | 250 | 251 | 251 | 252 | 252 | 251 | 252 | 253 | 250 | 253 | 252 | 250 |
| 8 | 164 | | 251 | | 248 | 253 | 251 | 249 | | - | 247 | 252 | 250 | | | 250 | | 8 | | 250 | 251 | 252 | 252 | 251 | 248 | 249 | 249 | 250 | 251 | 253 | 250 | 251 | 251 | 250 |
| 9 | | 252 | 251 | 248 | 249 | 250 | 250 | 253 | 249 | 248 | 248 | 250 | 250 | 249 | 252 | 247 | | 9 | 253 | 252 | 251 | 252 | 251 | 251 | 250 | 250 | 249 | 250 | 250 | 251 | 253 | 250 | 251 | 251 |
| 10 | 120 | 253 | 249 | 251 | 251 | 250 | 247 | 249 | 250 | 253 | 247 | 251 | 250 | 253 | 248 | 253 | | 10 | 249 | 253 | 249 | 250 | 253 | 252 | 251 | 249 | 250 | 252 | 251 | 250 | 251 | 251 | 253 | 251 |
| 11 | | 251 | 250 | 251 | 251 | 249 | 248 | 253 | 248 | 251 | 250 | 251 | 250 | 250 | 252 | 252 | | 11 | 248 | 250 | 251 | 251 | 252 | 251 | 249 | 250 | 251 | 250 | 251 | 251 | 251 | 250 | 250 | 251 |
| Horizontal Modules | | | | | | | | | | | | | | | | | Horiz | tontal | Mod | ules | | | | | | | | | | | | | | |
| | | | | | | | | | 14 | 12 | 10 | - 8 | 6 | 4 | 2 | 0 | | Position | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | 10 | | 6 | 4 | 2 | 0 |
| osition | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | | | | _ | _ | | | | | | | | | | | | 20 | | 24 | 12 | 10 | ۰ | | - | | |
| osition 11 | | 28 | 242 | 242 | 243 | 250 | 239 | 240 | 249 | | 247 | 245 | 247 | 249 | 249 | 244 | | 11 | | 251 | _ | | 249 | 233 | 237 | 241 | 239 | 246 | 232 | 239 | 244 | 240 | 245 | 244 |
| 11 10 | | | 242 248 | 242 | 243 249 | 250 | 239 247 | 240 71 | 249 239 | 247 125 | 247 244 | 245 172 | 247 245 | 249 145 | 249 246 | 244 147 | | 11 10 | 245 | 247 | | | | 233 245 | 237 246 | 241 244 | 239 250 | 246 247 | 232 247 | 239 247 | 244 245 | | 245 248 | 244 239 |
| 11 10 9 | 244 239 243 | 240 | 242 248 245 | 242 | 243 | 250 | 239 247 245 | 240 71 243 | 249 239 239 | 247 125 248 | 247 244 244 | 245 172 | 247 245 248 | 249 145 242 | 249 246 245 | 244 147 245 | eve 8 | 11 10 9 | 245 251 | 247 248 | 250 240 241 | 241 244 246 | | 233 245 251 | 237 246 249 | 241 244 248 | 239 250 248 | 246 247 247 | 232 247 247 | 239 247 247 | 244 245 252 | 246 | 245 248 247 | 239 243 |
| 11 10 9 8 | 244 239 243 240 | 240 | 242 248 245 241 | 242 | 243 249 245 244 | 250 | 239 247 | 240 71 | 249 239 239 237 | 247 125 248 229 | 247 244 244 243 | 245 172 | 247 245 | 249 145 242 227 | 249 246 245 244 | 244 147 245 234 | | 11 10 9 8 | 245 251 245 | 247 248 248 | 250 240 241 247 | 241 244 246 246 | 249 246 243 243 | 233 245 251 246 | 237 246 249 | 241 244 248 | 239 250 | 246 247 247 | 232 247 247 248 | 247 246 | 244 245 252 246 | 246 249 | 245 248 247 249 | 239 243 248 |
| 11 10 9 8 7 | 244 239 243 240 | 240 | 242 248 245 241 245 | 242 | 243 249 245 | 250 131 242 235 245 | 239 247 245 | 240 71 243 | 249 239 239 | 247 125 248 229 243 | 247 244 244 243 249 | 245 172 | 247 245 248 | 249 145 242 227 247 | 249 246 245 244 248 | 244 147 245 234 241 | | 11 10 9 8 7 | 245 251 245 242 | 247 248 | 250 240 241 | 241 244 246 246 | 249 246 243 243 248 | 233 245 251 246 250 | 237 246 249 | 241 244 248 | 239 250 248 | 246 247 247 | 232 247 247 248 246 | 247 | 244 245 252 246 247 | 246 249 247 | 248 248 247 249 249 | 239 243 248 247 |
| 11 10 9 8 7 6 | 244 239 243 240 240 245 | 240 131 245 230 243 242 | 242 248 245 241 245 247 | 242 | 243 249 245 244 248 245 | 250 131 242 235 245 248 | 239 247 245 239 242 243 | 240 71 243 236 246 245 | 249 239 239 237 242 242 | 247 125 248 229 243 244 | 247 244 244 243 249 247 | 245 172 243 231 244 246 | 247 245 248 | 249 145 242 227 247 248 | 249 246 245 244 248 248 | 244 147 245 234 241 240 | Tuesday eve 11/26/13 | 11 10 9 8 | 245 251 245 242 246 | 247 248 248 247 245 | 250 240 241 247 248 246 | 241 244 246 246 248 249 | 249 246 243 243 248 247 | 233 245 251 246 250 253 | 237 246 249 247 246 246 | 241 248 248 247 246 242 | 239 250 248 247 244 244 | 246 247 247 248 246 242 | 232 247 247 248 246 247 | 247 246 248 244 | 244 245 252 246 247 247 | 246 249 247 249 | 245 248 247 249 249 247 | 239 243 248 247 241 |
| 11 10 9 8 7 6 | 244 239 243 240 240 245 244 | 240 131 245 230 243 242 241 | 242 248 245 241 245 247 247 | 242 151 244 228 243 246 246 | 243 249 245 244 248 245 246 | 250 131 242 235 245 248 246 | 239 247 245 239 242 243 248 | 240 71 243 236 246 245 | 249 239 239 237 | 247 125 248 229 243 244 247 | 247 244 244 243 249 247 250 | 245 172 243 231 244 246 241 | 247 248 248 246 245 245 246 | 249 145 242 227 247 248 251 | 249 246 245 244 248 245 247 | 244 147 245 234 241 240 239 | | 11 10 9 8 7 6 | 245 251 245 242 246 249 | 247 248 248 | 250 240 241 247 248 246 243 | 241 246 246 246 248 249 246 | 249 246 243 243 248 247 | 233 245 251 246 250 253 | 237 246 249 | 241 248 248 247 246 242 | 239 250 248 247 244 244 244 | 246 247 247 248 246 242 | 232 247 247 248 246 247 247 | 247 246 | 244 245 252 246 247 247 246 | 246 249 247 249 247 | 245 248 247 249 249 247 249 | 239 243 248 247 241 247 |
| 11 10 9 8 7 6 5 | 244 239 243 240 240 245 244 244 | 240 131 245 230 243 242 241 245 | 242 248 245 241 245 247 247 244 | 242 151 244 228 243 246 246 248 | 243 249 245 244 248 245 | 250 131 242 235 245 248 246 248 | 239 247 245 239 242 243 248 247 | 240 71 243 236 246 245 249 246 | 249 239 237 242 242 247 246 | 247 125 248 229 243 244 247 247 | 247 244 244 243 249 247 250 246 | 245 172 243 231 244 246 241 249 | 247 248 248 246 245 245 246 246 | 249 145 242 227 247 248 251 246 | 249 246 245 244 248 245 247 245 | 244 147 245 234 241 240 239 246 | Tuesday 11/26/12 | 11 10 9 8 7 6 5 | 245 251 245 242 246 249 246 | 247 248 248 247 245 247 83 | 240 241 247 248 246 243 246 | 241 246 246 248 249 246 248 | 249 246 243 243 248 247 243 246 | 245 251 246 250 253 247 244 | 246 249 247 246 246 250 245 | 241 248 247 246 242 246 245 | 239 250 248 247 244 244 244 245 | 246 247 247 248 246 242 | 232 247 247 248 246 247 | 247 246 248 244 | 244 245 252 246 247 247 246 246 | 246 249 247 249 247 247 | 245 248 247 249 249 247 249 247 | 239 243 248 247 241 247 101 |
| 11 10 9 8 7 6 5 4 | 244 239 243 240 240 245 244 244 | 240 131 245 230 243 242 241 245 | 242 248 245 241 245 247 247 244 247 | 242 151 244 228 243 246 246 248 244 | 249 249 245 244 248 245 246 247 245 | 250 131 242 235 245 248 246 248 243 | 239 247 245 239 242 243 248 247 243 | 240 71 243 236 246 245 249 246 248 | 249 239 237 242 242 247 246 247 | 247 125 248 229 243 244 247 247 247 | 247 244 244 243 249 247 250 246 244 | 245 172 243 231 244 246 241 249 243 | 245 248 246 245 245 246 246 246 244 | 249 145 242 227 247 248 251 246 245 | 249 246 245 244 248 245 247 245 244 | 244 147 245 234 241 240 239 246 245 | Tuesday 11/26/12 | 11 10 9 8 7 6 5 4 | 245 251 245 242 246 249 246 244 | 247 248 248 247 245 247 83 | 250 240 241 247 248 246 243 246 246 | 244 246 246 248 249 246 248 249 | 249 246 243 243 248 247 243 246 | 245 251 246 250 253 247 244 248 | 246 249 247 246 246 250 245 248 | 241 248 247 246 242 246 245 243 | 239 250 248 247 244 244 244 245 245 | 246 247 248 248 246 242 244 246 243 | 232 247 247 248 246 247 247 244 245 | 247 246 248 244 247 245 245 | 244 245 252 246 247 247 246 246 242 | 249 247 249 249 247 247 247 | 245 248 247 249 249 247 249 247 248 | 239 243 248 247 241 247 101 248 |
| 11 10 9 8 7 6 5 4 3 | 244 239 243 240 240 245 244 244 244 245 | 240 131 245 230 243 242 241 245 246 243 | 242 248 245 241 245 247 247 244 247 | 242 151 244 228 243 246 246 248 244 243 | 243 249 245 244 248 245 246 247 245 243 | 250 131 242 235 245 248 246 248 243 246 | 239 247 245 239 242 243 248 247 243 246 | 240 71 243 236 246 245 249 246 248 248 | 249 239 237 242 242 247 246 247 243 | 247 125 248 229 243 244 247 247 243 248 | 247 244 243 249 247 250 246 244 246 | 245 172 243 231 244 246 241 249 243 246 | 245 248 246 245 245 245 246 246 244 245 | 249 145 242 227 247 248 251 246 245 244 | 249 246 245 244 248 245 247 245 244 245 | 244 147 245 234 241 240 239 246 245 245 | Tuesday 11/26/12 | 111 100 9 8 7 6 5 4 3 | 245 251 245 242 246 249 246 244 245 | 247 248 248 247 245 247 83 244 245 | 250 240 241 247 248 246 243 246 246 249 | 241 246 246 248 249 246 248 249 246 | 249 246 243 248 247 243 246 246 244 | 245 251 246 250 253 247 244 | 246 249 247 246 246 250 245 248 244 | 241 248 247 246 242 246 245 243 248 | 239 250 248 247 244 244 244 245 245 245 | 246 247 247 248 246 242 | 232 247 247 248 246 247 247 244 245 246 | 247 246 248 244 247 245 245 243 | 244 245 252 246 247 247 246 246 242 240 | 246 249 247 249 247 247 247 244 | 245 248 247 249 249 247 249 247 248 251 | 239 248 247 241 247 101 248 243 |
| 11 10 9 8 7 6 5 4 3 2 | 244 239 243 240 240 245 244 244 244 245 237 | 240 131 245 230 243 242 241 245 | 242 248 245 241 245 247 247 244 247 244 245 | 242 151 244 228 243 246 246 248 244 243 249 | 243 249 245 244 248 245 246 247 245 243 249 | 250 131 242 235 245 248 246 248 243 246 250 | 239 247 245 239 242 243 248 247 243 246 244 | 240 71 243 236 246 245 249 246 248 248 248 | 249 239 237 242 242 247 246 247 243 250 | 247 125 248 229 243 244 247 247 243 248 249 | 247 244 243 249 247 250 246 244 246 245 | 245 172 243 231 244 246 241 249 243 246 247 | 247 248 248 246 245 245 246 246 244 245 245 | 249 145 242 227 247 248 251 246 245 244 248 | 249 246 245 244 248 245 247 245 244 245 252 | 244 147 245 234 241 240 239 246 245 245 247 | Tuesday 11/26/12 | 111 100 9 8 7 6 5 4 3 2 | 245 251 245 246 246 246 246 244 245 250 | 247 248 248 247 245 247 83 244 245 242 | 250 240 241 247 248 246 243 246 246 249 248 | 241 246 246 248 249 246 248 249 246 246 246 | 249 246 243 243 248 247 243 246 246 244 248 | 245 245 251 246 250 253 247 244 248 248 237 | 246 249 247 246 246 250 245 248 248 244 | 241 248 247 246 242 246 245 243 248 245 | 239 250 248 247 244 244 244 245 245 245 240 | 246 247 248 248 246 242 244 246 243 243 231 | 232 247 247 248 246 247 247 244 245 246 244 | 247 246 248 244 247 245 245 | 244 245 252 246 247 247 246 246 242 | 246 249 247 249 247 247 247 244 226 | 245 248 247 249 249 247 249 247 248 251 247 | 239 243 248 247 241 247 101 248 243 245 |
| 11 10 9 8 7 6 5 4 3 2 | 244 239 243 240 240 245 244 244 244 245 | 240 131 245 230 243 242 241 245 246 243 | 242 248 245 241 245 247 247 244 247 | 242 151 244 228 243 246 246 248 244 243 | 243 249 245 244 248 245 246 247 245 243 | 250 131 242 235 245 248 246 248 243 246 | 239 247 245 239 242 243 248 247 243 246 244 | 240 71 243 236 246 245 249 246 248 248 | 249 239 237 242 242 247 246 247 243 | 247 125 248 229 243 244 247 247 243 248 249 | 247 244 243 249 247 250 246 244 246 | 245 172 243 231 244 246 241 249 243 246 247 | 245 248 246 245 245 245 246 246 244 245 | 249 145 242 227 247 248 251 246 245 244 248 | 249 246 245 244 248 245 247 245 244 245 | 244 147 245 234 241 240 239 246 245 245 | dayday Tuesday /13 11/26/12 | 111 100 9 8 7 6 5 4 3 | 245 251 245 246 246 246 246 244 245 250 | 247 248 248 247 245 247 83 244 245 242 | 250 240 241 247 248 246 243 246 246 249 | 241 246 246 248 249 246 248 249 246 246 246 | 249 246 243 248 247 243 246 246 244 | 245 245 251 246 250 253 247 244 248 248 237 | 246 249 247 246 246 250 245 248 248 244 | 241 248 247 246 242 246 245 243 248 245 | 239 250 248 247 244 244 244 245 245 245 | 246 247 248 248 246 242 244 246 243 243 231 | 232 247 247 248 246 247 247 244 245 246 | 247 246 248 244 247 245 245 243 | 244 245 252 246 247 247 246 246 242 240 | 246 249 247 249 247 247 247 244 226 | 245 248 247 249 249 247 249 247 248 251 | 239 243 248 247 241 247 101 248 243 245 |

FarDet performance – DAQ Uptime



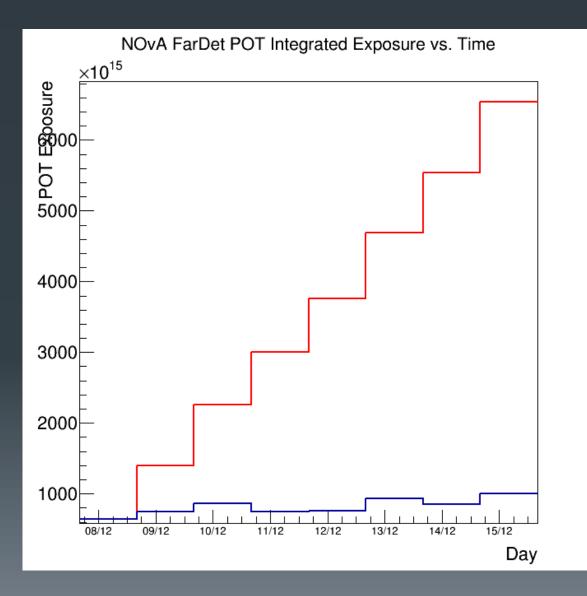
- Very reliable, continuous running on weekends
- APD installation weekdays interrupts DAQ
- Weekday replacements also stops DAQ
- On when beam is off (commissioning with c-rays)
- Some problems starting runs over past week/weekend (DAQ size?, full disks?)

FarDet Performance – Fraction of POTs Recorded



- Very reliable, continuous running on weekends
- DAQ uptime when beam is off (commissioning with c-rays)

FarDet Performance – Integrated POT



- Daily (blue) and integrated (red)
 POT exposure
- During APD installation and hardware replacement, DAQ uptime and POT exposure depends on location of work
- Steady increase (however HORN OFF)

Require ~5E19 POT to see a neutrino at 90% CL – with 2 kT (2 diblocks)

So far ~9.3E18 has been collected in good runs

Near Detector Schedule



News and Schedule



- Block #8 assembly started last Thursday, Dec 12
 47 module delivered Dec 12, one more shipment this Thursday
 Projected assembly finish date is Jan 3
- Electronics ORC granted last Wednesday, Dec 11

 Thanks Bill for tracking down the HVAC network cable issue FEB-DCM cabling status?
- Scintillator filling ORC review started

Safety documentations submitted
First safety walk-though this Wednesday(?)
Setting up filling machines — Nathan Mayer/Nitin Yadav/Karen

- FNAL tanker–to-MSB moving schedule
 - MSB window fire-protection insulation underway? Secondary containment berm installation right after window insulation New Teflon lined tanker hose with 35' long ordered last week Hole on MSB door or wall – Bill taking to fire chief and Jim Priest More statis-425 to the tanker before moving over
- FEB5 testing news?

8th Block completes the Near Detector!

Summary

- NDOS Prototype running smoothly, useful for testing of software/ firmware/monitoring upgrades before rolling out at FarDet – presently testing new FEBs for Near Detector
- FarDet 2.5 diblocks running cold at full gain very smooth running, >3 diblocks instrumented with APDs, 26th block (out of 28) in place – new APD installation ongoing
- Very good performance of APDs w/o A174 primer 2*(1/2) diblocks running with full gain.
- Plan to run with 2 + 3*(1/2) diblocks of instrumented APDs in cold configuration with full gain over holidays
- NearDet 7/8 of the Near Detector blocks are in place last block in place by January 3, 2014, scintillator filling to start immediately after